

### ABSTRACT OF THE DISCLOSURE

An apparatus is provided for treating wastewater with alkanes such as butane. An oxygen-containing gas may also be introduced into the wastewater. Butane, because of its relatively high solubility, rapidly dissolves in the wastewater, thereby significantly increasing the heterogeneous microbial community and heterotrophic microbial population. This enhanced microbial population may rapidly absorb and mineralize materials in the wastestream. After an initial growth phase, the organic matter available in the wastewater effluent may be rapidly decreased, thereby reducing the amount of BOD, TDS, sludge and other pollutants. In addition, the use of butane reduces noxious odors associated with municipal wastewater sludges and other types of wastewater.